

### REMARKS

Claims 1 and 3-72 are pending.

Claim 2 has been cancelled.

In the Final Rejection dated April 16, 2009, claims 19-30 were objected to; claims 52-60 and 62-72 were rejected under 35 U.S.C. § 112, ¶ 2; claims 19-21, 23, 25-30, 41-43, 45, 61-64, 66 and 70-72 were rejected under 35 U.S.C. § 102(b) as anticipated by Bugnion (U.S. Patent No. 6,075,938); claims 1-18, 31-40, and 52-60 were rejected under 35 U.S.C. § 103(a) as unpatentable over Bugnion in view of Nelson (U.S. Patent No. 6,961,941); claims 22, 44, and 65 were rejected to under 35 U.S.C. § 103(a) as unpatentable over Bugnion in view of Bugnion02 (U.S. Patent No. 6,496,847); and claims 24, 46-51 and 67-69 were rejected under 35 U.S.C. § 103(a) as unpatentable over Bugnion.

Claim 19 has been amended to address the claim objection. Therefore, withdrawal of the claim objection is respectfully requested.

Independent claims 52 and 62 have been amended to change “containing” to “storing,” as suggested by the Examiner. Therefore, withdrawal of the § 112, rejection is respectfully requested.

It is respectfully submitted that claim 19 is not anticipated by Bugnion. Claim 19 recites devirtualizing the virtualized computer hardware at runtime of a computer containing the virtualized computer hardware, where runtime includes a period of execution in the computer after boot and before shutdown.

As purportedly disclosing the foregoing features of claim 19, the Office Action cited the following passages of Bugnion: column 9, lines 24-26; column 11, lines 8-20. The cited column 9 passage refers to an entity called “Disco” that runs multiple independent virtual machines simultaneously on the same hardware by virtualizing all the resources of the machine. The cited column 9 passage also states that each virtual machine can run a standard operating system that manages its virtualized resources independently of the rest of the system.

The cited column 11 passage of Bugnion refers to the fact that Disco contains a scheduler that allows virtual processors to be timed-shared across the physical processors of a machine. Bugnion further states that Disco will deschedule a virtual CPU until the mode is cleared or an interrupt is posted.

However, descheduling a virtual CPU appears to merely refer to the fact that a physical processor is not assigned to a particular virtual processor—this descheduling does not constitute **devirtualizing** computer hardware at runtime of a computer. Descheduling a virtual CPU just means that the virtual CPU is not currently being allocated a share of the physical CPU for execution – however, it appears that in Bugnion, the virtual CPU concept still exists, since the virtual CPU can proceed to execute when “the mode is cleared or when an interrupt is posted.” Bugnion, 11:18-20.

Applicant’s argument presented above are consistent with a concession made by the U.S. Patent and Trademark Office in copending U.S. Serial No. 10/676,922, in which the Examiner in that application conceded that Bugnion “does not teach devirtualizing the I/O device at runtime.” 6/4/2007 Office Action in U.S. Serial No. 10/676,922, page 8.

Therefore, it is respectfully submitted that claim 19 is clearly not anticipated by Bugnion. Independent claims 41 and 62 are similarly not anticipated by Bugnion.

#### REJECTION UNDER 35 U.S.C. § 103 OVER BUGNION AND NELSON

Claim 1 has been amended to incorporate the subject matter of former dependent claim 2. With respect to the subject matter of claim 1, the Office Action conceded that Bugnion fails to disclose that the interposing occurs after booting of the computer. However, the Office Action cited Nelson as purportedly disclosing this element of claim 1.

It is noted that in Nelson, the VMM 300 is provided between a VM 200 and a kernel 600, as shown in Fig. 1 of Nelson. Fig. 1 also shows a commodity operating system (COS) 420 that communicates with the kernel 600 (or with the hardware 100). Note that claim 1 specifies that the virtual machine monitor is interposed between the computer hardware and the operating system at runtime, and that the operating system on the computer hardware is booted **before** interposing the virtual machine monitor at runtime. In Fig. 1 of Nelson, a virtual operating system 220 is provided in the virtual machine 200. However, the virtual machine 200 (and its virtual operating system 220) cannot exist prior to provision of the virtual machine monitor. Thus, it would be impossible for the virtual operating system 220 to be booted on the computer hardware before interposing the virtual machine monitor at runtime, as recited in claim 1. Therefore, the virtual operating system 220 of Nelson cannot satisfy the operating system recited in claim 1.

On the other hand, if the commodity operating system (COS) 420 of Nelson were to be considered the operating system of claim 1, it is noted that the COS 420 communicates with the kernel 600 or with hardware 100. The VMM 300 in Nelson is not interposed between the COS 420 and the kernel 600.

In view of the foregoing, it is respectfully submitted that even if Bugnion and Nelson could be hypothetically combined, the hypothetical combination of the references would not have led to the subject matter of claim 1. Therefore, claim 1 is non-obvious over Bugnion and Nelson.

Independent claims 31 and 52 are similarly allowable over Bugnion and Nelson.

Independent claim 61 is also not anticipated by Bugnion.

Note that claim 61 recites an I/O driver having first and second modes of operation, where the I/O driver is operable in the first mode to interface directly between the operating system and the I/O device, and the I/O driver is operable in the second mode to interface between the operating system and a corresponding I/O driver of the virtual machine monitor.

Although Bugnion refers to device drivers, it is noted that Bugnion nowhere refers to a device driver that is able to operate in two different modes in the manner recited in claim 61. As purportedly disclosing the subject matter of claim 61, the Office Action cited the following passages of Bugnion: column 11, lines 48-51; column 14, lines 38-54; and column 17, lines 14-28. The cited column 11 passage of Bugnion refers to handling hardware interrupts directly by the VMM through its own device drivers. The cited column 14 passage of Bugnion refers to adding special device drivers into the operating system. The cited column 17 passage of Bugnion refers to Disco's monitor call interface reducing the complexity and overhead of accessing I/O devices. The cited column 17 passage also notes that the monitor call interface provides a view of an idealized device, and the implementation of drivers is straightforward.

However, none of the passages cited by the Office Action provide any hint of an I/O driver that is operable in **two modes** of operation in the manner recited in claim 61. Therefore, claim 61 is clearly not anticipated by Bugnion.

CONCLUSION

Dependent claims are allowable for at least the same reasons as corresponding independent claims. In view of the allowability of base claims, the obviousness rejections of dependent claims have been overcome.

Allowance of all claims is respectfully requested.

The Commissioner is authorized to charge any additional fees and/or credit any overpayment to Deposit Account No. 08-2025 (200208633-1).

Respectfully submitted,

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/Dan C. Hu/

Dan C. Hu  
Registration No. 40,025  
TROP, PRUNER & HU, P.C.  
1616 South Voss Road, Suite 750  
Houston, TX 77057-2631  
Telephone: (713) 468-8880  
Facsimile: (713) 468-8883